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EXAMINER	
MORRISON, JAY A	

ART UNIT	PAPER NUMBER
2168	

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/637,122	HENDERSON ET AL.	
	Examiner	Art Unit	
	Jay A. Morrison	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-66 are pending.

Claim Objections

2. Claim 1 is objected to because of the following informalities:

   a. As per claim 1, line 2: 'storing data object' should be 'storing a data object'.

   Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-16 and 19-51 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claims 1-16 and 19-51, the cited claims do not produce a tangible result. The claims contain functional descriptive material, however in most cases this material is only statutory when recorded on some computer-readable medium. To be tangible the claimed invention must produce a practical application or real world result. In this case the claims fail to perform a physical transformation because the claims are directed to operating on data. The claims are useful and concrete, but they fail to produce a tangible result because the results are not stored on non-volatile medium or, for example, reported to a user.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 10,15,28,43, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiter et al. ('Reiter' hereinafter) (Patent Number 5,752,243) in view of Cormen et al. ('Cormen' hereinafter) (Introduction to Algorithms, ISBN: 0262031318).

As per claim 1, Reiter teaches

"a root node, the root node" (column 7, lines 35-50) " including a number of sequential keys, each key including a first value and a second value, the first and second values of each key defining a range for that key, wherein the ranges of the number of key are non-overlapping" (column 4, line 52, through column 5, line 7, whereas Reiter's key values K1 and K2 are equivalent to the claimed first and second values);

"and a pointer associated with the root node, the pointer identifying a child node, the child node having a range outside the range of each key in the root node" (column 4, line 52, through column 5, line 7, whereas Reiter's pointer that points to second child

node that holds data associated with key values greater than K1 is equivalent to the claimed pointer identifies child node having range outside range of each key in root).

Reiter does not explicitly indicate "the ranges between each key are capable of having gaps".

However, Cormen discloses "the ranges between each key are capable of having gaps" (page 19, figure 1, whereas Cormen's some of the keys in the nodes have gaps is equivalent to the claimed the ranges between each key are capable of having gaps).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Reiter and Cormen because using the steps of "the ranges between each key are capable of having gaps" would have given those skilled in the art the tools to improve the invention by not requiring that each key is represented in the tree. This gives the user the advantage of not having wait longer for results.

As per claim 2, Reiter teaches

"at least one of the keys of the root node further includes a data element" (column 2, lines 27-44).

As per claim 3, Reiter teaches

"at least one of the keys of the root node further includes a pointer to an associated data element" (column 4, lines 52-62).

As per claim 4, Reiter teaches

"the first value includes a lower bound of the range and the second value includes an upper bound of the range" (column 4, line 52, through column 5, line 7, whereas Reiter's key values K1 and K2 are equivalent to the claimed lower and uppe bound).

As per claim 5, Reiter teaches

"one of the keys of the root node includes a pointer to a set of data elements" (column 4, line 52, through column 5, line 7).

As per claim 6, Reiter teaches

"the set of data elements comprises a linked list" (column 9, lines 30-44, whereas Reiter's next and previous page link fields are equivalent to the claimed linked list).

As per claim 7, Reiter teaches

"each data element of the set is associated with the range of the one key" (column 4, line 52, through column 5, line 7, whereas Reiter's first child node holds data associated with key values less than or equal to K1 is equivalent to the claimed each element is associated with the range of the one key).

As per claim 8, Reiter teaches

"one data element of the set is further associated with another one of the keys of the root node" (column 4, line 52, through column 5, line 7, whereas Reiter's first child

node holds data associated with key values less than or equal to K1 is equivalent to the claimed each element is associated with the range of the one key).

As per claim 9, Reiter teaches

"the set of data elements is prioritized" (column 5, line 64, through column 6, line 5, whereas Reiter's data are ordered alphabetically is equivalent to the claimed data elements prioritized).

As per claim 13, Reiter teaches

"the range of the child node is between the ranges of two sequential keys" (column 7, lines 35-50).

As per claim 14, Reiter teaches

"the range of the child node is beyond the range of an end key of the number of keys" (column 4, line 52, through column 5, line 7, whereas Reiter's pointer that points to second child node that holds data associated with key values greater than K1 is equivalent to the claimed pointer identifies child node range is beyond the range of the end key).

As per claim 16, Reiter teaches

"the root node and the child node comprise a B-Tree data structure" (column 6, lines 43-55).

As per claim 17, Reiter teaches

"the data structure is capable of being stored in a machine readable medium" (column 4, lines 44-51).

As per claim 18, Reiter teaches

"the machine readable medium comprises one of a memory device, a carrier wave, an optical storage device, and a magnetic storage device" (column 4, lines 44-51).

As per claims 19-27,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 1-9 and are similarly rejected.

As per claims 31-32,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 13-14 and are similarly rejected.

As per claim 33, Reiter teaches

"the number of sequential keys are stored in contiguous memory locations of the memory" (column 6, lines 56-65).

As per claims 34-42,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 1-9 and are similarly rejected.

As per claims 46-47,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 13-14 and are similarly rejected.

As per claim 48, Reiter teaches

"a processing device coupled with the memory" (column 4, lines 44-51).

As per claim 49, Reiter teaches

"the processing device includes logic to generate the data structure" (column 4, lines 25-51).

As per claim 50, Reiter teaches

"a set of instructions stored in the memory that, when executed on the processing device, generate the data structure in the memory" (column 4, lines 25-51).

As per claim 51, Reiter teaches

"the processing device includes a set of instructions stored thereon that, when executed on the processing device, generate the data structure in the memory" (column 4, lines 25-51).

As per claims 52-60,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 1-9 and are similarly rejected.

As per claims 64-65,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 13-14 and are similarly rejected.

As per claim 66,

This claim is rejected on grounds corresponding to the arguments given above for rejected claims 33 and are similarly rejected.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 10,15,28,43, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiter et al. ('Reiter' hereinafter) (Patent Number 5,752,243) in view of Cormen et al. ('Cormen' hereinafter) (Introduction to Algorithms, ISBN: 0262031318) and further in view of Michels et al. ('Michels' hereinafter) (Patent Number 6,161,144).

As per claim 10,

Reiter does not explicitly indicate "a highest priority data element of the set of data elements corresponds to a data element having a longest length prefix".

However, Michels discloses "a highest priority data element of the set of data elements corresponds to a data element having a longest length prefix" (column 7, lines 35-65, whereas Michels' network address field contains network addresses in sorted order is equivalent to the claimed highest priority element of set having longest length prefix).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Reiter, Cormen and Michels because using the steps "a highest priority data element of the set of data elements corresponds to a data element having a longest length prefix" would have given those skilled in the art the tools to improve the invention by providing tools to quickly and efficiently search through network address lookup tables. This gives the user the advantage of having faster networks.

As per claim 15, Reiter teaches

"the range of each of the keys" (column 4, line 52, through column 5, line 7, whereas Reiter's key values K1 and K2 are equivalent to the claimed range).

Reiter does not explicitly indicate "corresponds to a range of network addresses".

However, Michels discloses "corresponds to a range of network addresses" (column 7, lines 35-65, whereas Michels' network addresses is equivalent to the claimed range of network addresses).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Reiter, Cormen and Michels because using the steps "corresponds to a range of network addresses" would have given those skilled in the art the tools to improve the invention by providing tools to quickly and efficiently search through network address lookup tables. This gives the user the advantage of having faster networks.

As per claims 28,43, and 61,

These claims, respectively, are rejected on grounds corresponding to the arguments given above for rejected claim 10 and are similarly rejected.

9. Claims 11-12,29-30,44-45, and 62-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiter et al. ('Reiter' hereinafter) (Patent Number 5,752,243) Cormen et al. ('Cormen' hereinafter) (Introduction to Algorithms, ISBN: 0262031318) and further in view of Choate et al. ('Choate' hereinafter) (Patent Number 3,725,875).

As per claim 11, Reiter teaches

"including a number of keys that is less than a minimum number of keys" (column 8, lines 16-24, whereas Reiter's subnode does not include keys is equivalent to the claimed number of keys is less than a minimum).

Reiter does not explicitly indicate "a temporary node".

However, Choate discloses "a temporary node" (column 19, lines 20-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Reiter, Cormen and Choate because using the steps "a temporary node" would have given those skilled in the art the tools to improve the invention by rearranging nodes in storage. This gives the user the advantage of faster data access.

As per claim 12, Reiter teaches

"having a range overlapping with the range of at least one of the keys in the root node" (column 7, whereas Reiter's page overflow is equivalent to the claimed range overlapping range of least on key in the root).

Reiter does not explicitly indicate "a temporary key, the temporary key".

However, Choate discloses "a temporary key, the temporary key" (column 19, lines 30-38).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Reiter, Cormen and Choate because using the steps "a temporary key, the temporary key" would have given those skilled in the art the tools to improve

the invention by rearranging keys in storage. This gives the user the advantage of faster data access.

As per claims 29-30, 44-45, and 62-63,

These claims, respectively, are rejected on grounds corresponding to the arguments given above for rejected claims 11-12 and are similarly rejected.

Response to Arguments

10. Applicant's arguments regarding art rejections with respect to claims 1-66 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record, listed on form PTO-892, and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay A. Morrison whose telephone number is (571) 272-7112. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached on (571) 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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